PHARM.D • YEAR 3

Advanced Pharmacology

CHAPTER 3.12

Pharmacology of Anthelmintic Drugs

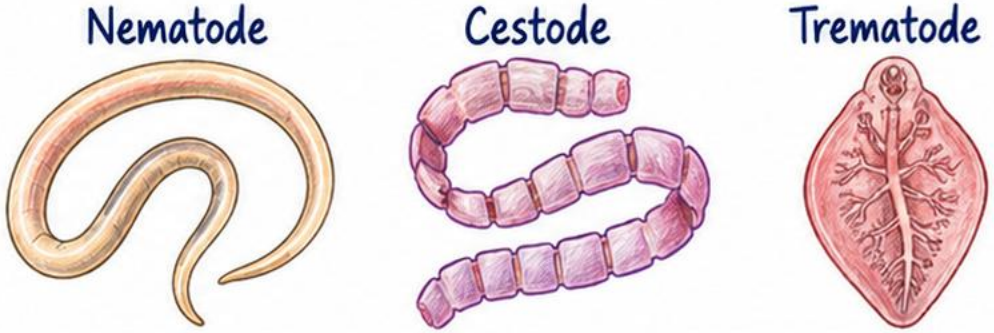
PPT CHAPTER COVER



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Anthelmintics: worm type and treatment site

Helminths include nematodes, cestodes and trematodes. Effective treatment depends on the species, location and life-cycle stage.



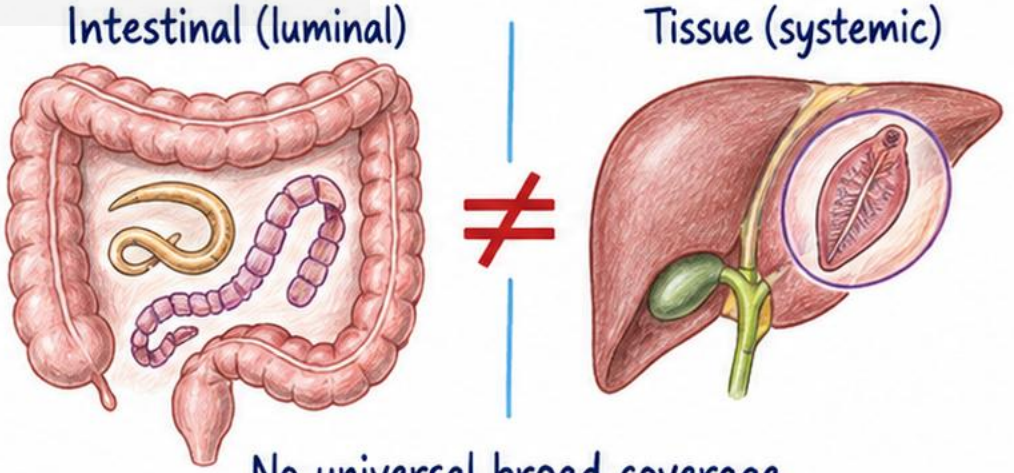


Anthelmintics can disrupt metabolism, injure the parasite surface or produce paralysis that helps expulsion.

Albendazole and mebendazole treat selected nematodes; ivermectin and diethylcarbamazine have specific systemic parasite roles.

Praziquantel treats many cestodes and trematodes, while niclosamide has a mainly luminal tapeworm role.

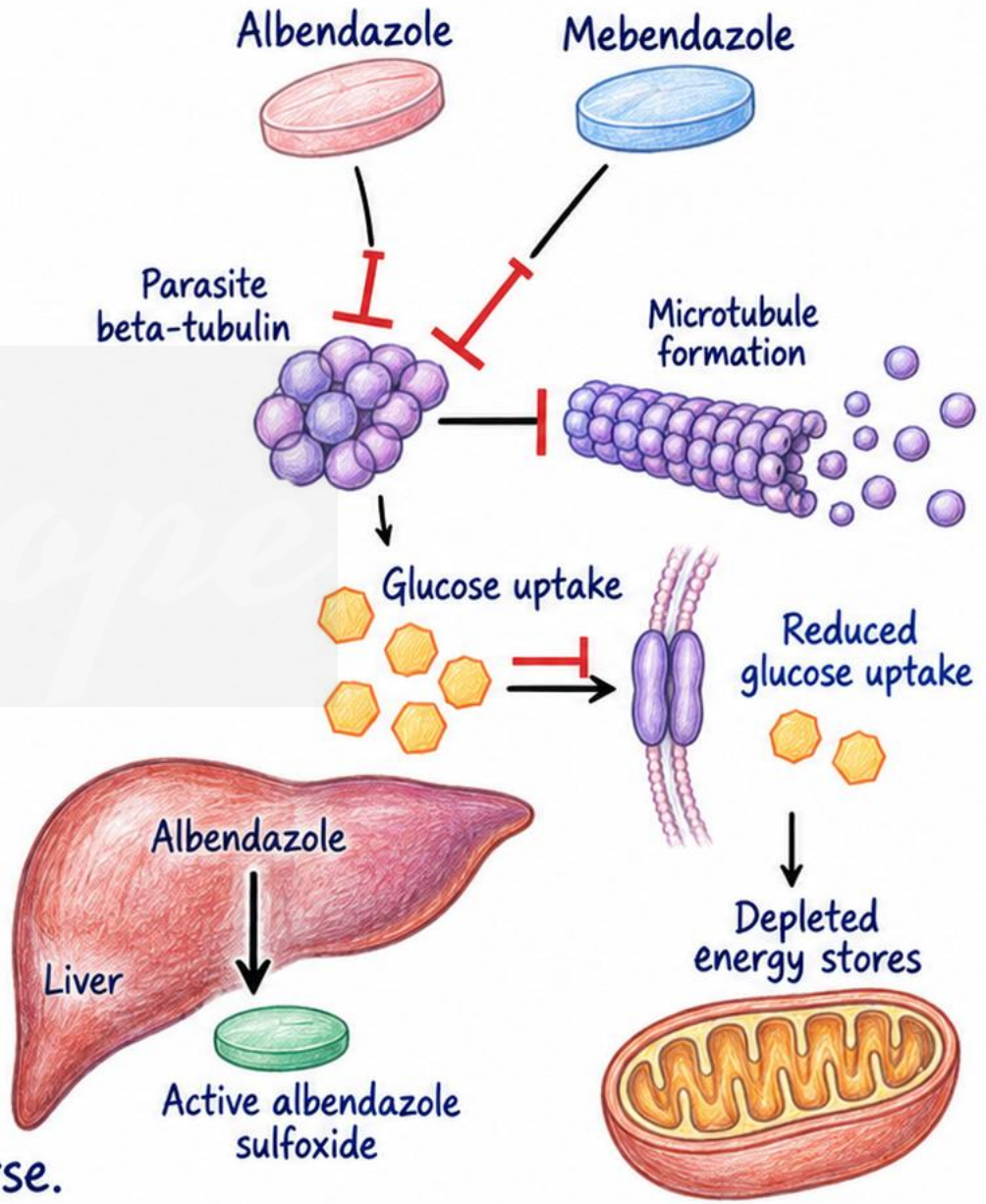
Triclabendazole is important for Fasciola infection, which is not reliably treated by praziquantel. Do not interpret broad-spectrum activity as coverage of every worm or assume a single-dose schedule fits intestinal and tissue infections alike.



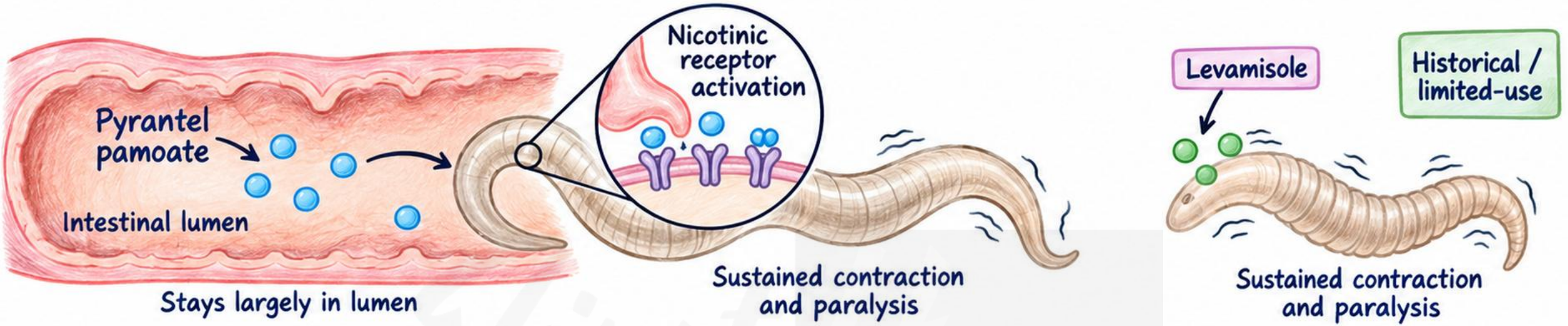
No universal broad coverage.

Benzimidazoles: tubulin and energy depletion

- Albendazole and mebendazole bind parasite beta-tubulin and inhibit microtubule formation, impairing glucose uptake and depleting energy stores.
- Oral absorption is limited, especially for mebendazole. Albendazole is converted in the liver to active albendazole sulfoxide.
- Food effects matter for systemic exposure; fatty meals improve albendazole absorption in relevant tissue-infection regimens.
- Uses include selected intestinal nematodes and, for albendazole, specialist treatment of hydatid disease or neurocysticercosis.
- Regimens vary by parasite. Prolonged therapy needs liver and blood-count monitoring. Pregnancy, hepatic disease and tissue-site inflammation require assessment rather than an identical rule for every short deworming course.



Pyrantel and levamisole: worm paralysis



- Pyrantel pamoate activates parasite nicotinic receptors and produces depolarizing neuromuscular paralysis, facilitating expulsion.
- Poor gastrointestinal absorption limits systemic exposure and supports its intestinal use against selected worms, including pinworm.
- Gastrointestinal symptoms, headache or rash can occur; age and hepatic precautions follow the actual product.
- Levamisole also produces sustained worm contraction but has largely historical or limited-use roles.
- Agranulocytosis and neurologic toxicity are important levamisole hazards. Its old oncology immunomodulatory role should not be presented as routine contemporary treatment.
  Paralysis does not establish efficacy against migrating larvae, tissue cysts or every nematode species.

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